



Concept:

Demonstrates Boyle's Law which states that, "For a fixed amount of gas kept at a fixed temperature, P and V are inversely proportional (while one increases, the other decreases)." ¹

Procedure:

1. Partially inflate the balloon and place it in the vacuum chamber (see picture).
2. Cover the vacuum chamber with the lid.
3. Connect the vacuum pump hose to the vacuum chamber ².
4. Plug the vacuum pump into a power outlet.
5. Turn on the vacuum pump using the switch (1) at the back of pump and watch the balloon grow.
6. Turn off the pump and close the vacuum valve (2) to prevent air leaking.
7. Unscrew one of the top brass caps (3) in order to release the air in the chamber.
8. When the chamber has been filled with air (i.e., no more hissing noise), disconnect the pump ³ from the vacuum chamber.
9. Remove the lid and take out the balloon.

Equipment:

- Transparent vacuum chamber
- Vacuum pump with hose
- Medium (or large) balloon

Notes and Extras:

- [Demo Video Link](#)
- ¹ [Boyle's Law on Wikipedia](#)
- ² To connect the pump to the chamber, hold the hose close to the chamber, hold the hose close to the connector and push it in (see picture).
- ³ To disconnect the pump, hold the connector by the knurled ring (4) and **push** it in.